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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/707,601	12/23/2003	Michael Scott Hebert	GEMS 0229 PA	1600
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ARTZ & ARTZ, P.C. 28333 TELEGRAPH RD. SUITE 250 SOUTHFIELD, MI 48034			SANEI, MONA M	
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/707,601	Applicant(s) HEBERT ET AL.	
	Examiner Mona M. Sanei	Art Unit 2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>06042004</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION***Specification***

The disclosure is objected to because of the following informalities: In paragraph [0022] of the specifications, a reference is made to the "x-ray facing surface," followed by an incorrect number, 26. The x-ray facing surface is actually represented by the number both paragraph [0020] and Figures 1 and 2. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-12, 13-17, and 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In Claim 1, line 8, the phrase "can be" is indefinite insofar as it is unclear whether the limitations following the phrase are or are not part of the claim.

In Claim 8, line 4, the phrase "said securable" is not understood. Perhaps "said at least one weight element is securable" was meant.

In Claim 13, line 7, the phrase "can be" is indefinite insofar as it is unclear whether the limitations following the phrase are or are not part of the claim. Additionally, on line 7, the phrase "said target shaft" lacks proper antecedent basis.

In Claim 14, line 2, the phrase "said circumferential feature" lacks proper antecedent basis.

In Claim 20, line 3, the term "in" is indefinite because it is unclear whether "in" means on, around, etc.

Claim Rejections - 35 USC § 103

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This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-4, 6, 9-11, 13, 14, 16, 18, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumoto (4,413,355) in view of Berry et al. (6,481,969).

With respect to Claims 1, 13, and 18, Matsumoto teaches an x-ray assembly comprising an x-ray target element (Col. 1, lines 12-14; Figs. 1 and 2A, #14) that is mounted to a target shaft (rotary shaft, Col. 1, lines 16-20; Figs. 2A, 2B, and 3, #16).

Matsumoto fails to teach at least one weight element adapted to be securable in a plurality of positions within a circumferential feature such that the x-ray target element is balanced around the target shaft.

Berry et al. teaches an assembly and method of balancing a rotating element using a circumferential groove (circumferential balance groove, Col. 1, lines 13-17) and at least one weight element (balance weight, Col. 1, lines 20-24) that is adaptable

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to be securable (Col. 1, lines 31-37) in a plurality of positions in the groove (Col. 2, lines 4-8).

It would have been obvious to one of ordinary skill in the art at the time of the invention to apply the balancing technique taught by Berry et al. to the rotating target element taught by Matsumoto. One would have been motivated to make this modification to avoid operational stresses such as noise, vibrations, and bearing deterioration.

With respect to Claims 2, 14, and 19, Berry et al. teaches a circumferential groove formed in the rotating element (Col. 1, lines 13-17).

With respect to Claims 3 and 4, Berry et al. teaches that the circumferential groove can be provided "in one or more of the rotational components at locations corresponding to as large a radius as possible (see Col. 1, lines 11-16)." Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to position the circumferential groove of Berry et al. around a perimeter of the x-ray facing surface of Matsumoto. One would have been motivated to make this modification to more effectively balance the target element.

With respect to Claim 6, Berry et al. teaches an entry port (loading aperture, Col. 2, lines 4-8) formed in the circumferential groove.

With respect to Claims 9, 11, and 16, Berry et al. teaches a securing elbow slot (inclined side wall, Col. 4, lines 59-63) in the circumferential groove wherein the at least one weight element includes a securing elbow adapted to fit within the securing elbow slot (Col. 5, lines 1-5). The securing elbow slot is considered to be the triangular slot (see Fig. 9).

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2. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumoto and Berry et al. as applied to Claim 1 above, and further in view of Siebolds et al. (2002/0020315 A1).

With respect to Claim 10, Matsumoto as modified by Berry et al. teaches all the characteristic features of the invention but fails to particularly teach a securing elbow slot comprised of a t-shaped slot.

Siebolds et al. teaches a t-shaped securing elbow slot (t-slot, [0040]; Fig. 1, #2).

The t-shaped slot of Siebolds et al. is equally effective as the triangular slot of Berry et al. Further, applicant has provided no criticality regarding the particular slot configuration employed nor that it solves any long-standing problem in the art. Therefore, it would have been an obvious matter of design for one of ordinary skill in the art at the time the invention was made to employ the t-shaped securing elbow slot of Siebolds et al. in place of the triangular slot suggested by Berry et al. in view of its functional equivalence.

3. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumoto and Berry et al. as applied to Claim 1 above, and further in view of Barber (4,842,485).

With respect to Claim 12, Matsumoto as modified by Berry et al. teaches all the characteristic features of the invention but fails to teach an expandable weight assembly including an expansion bore and an expansion screw wherein the expansion screw expands the expandable weight assembly to secure at least one weight element within the circumferential groove.

Barber teaches an expandable weight assembly (Col. 1, line 61 to Col. 2, line 4; Figs. 1, 2, 3, & 5; #15) including a bore (Col. 2, lines 5-17; Figs. 3, 4, 5, 6, and 7; #37)

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and an expansion screw (Col. 2, lines 5-17; Figs. 3 & 5, #27) to expands the expandable weight within a circumferential groove (circular groove, Col. 1, line 61 to Col. 2, line 4; Figs. 1, 3, & 5, #13).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the expandable weight assembly of Barber to balance the target element of Matsumoto. One would have been motivated to make this modification because the friction fit of the expandable weight assembly allows for precise placement.

4. Claims 1-4, 6, 7, 13, 14, and 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumoto (4,413,355) in view of Suzuki (6,449,000).

With respect to Claims 1, 13, and 18, Matsumoto teaches an x-ray assembly comprising an x-ray target element (Col. 1, lines 12-14; Figs. 1 and 2A, #14) that is mounted to a target shaft (rotary shaft, Col. 1, lines 16-20; Figs. 2A, 2B, and 3, #16).

Matsumoto fails to teach at least one weight element adapted to be securable in a plurality of positions within a circumferential groove such that the x-ray target element is balanced around the target shaft.

Suzuki teaches an assembly and method of balancing a rotating element using a circumferential groove (concentric recess, Col. 3, lines 42-53; Fig. 3, #32) and at least one weight element (balance weight, Col. 3, lines 42-53; Fig. 3, #32) that is adaptable to be securable (Col. 7, lines 49-53) in a plurality of positions in the groove (Col. 3, lines 62-65).

It would have been obvious to one of ordinary skill in the art at the time of the invention to apply the balancing technique taught by Suzuki to the rotating target element taught by Matsumoto. One would have been motivated to make this

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modification to avoid operational stresses such as noise, vibrations, and bearing deterioration.

With respect to Claims 2, 14, and 19, Suzuki teaches a circumferential groove formed in the rotating element (Col. 1, lines 13-20).

With respect to Claim 3, Suzuki teaches a circumferential groove positioned around the perimeter surface of a rotating element as shown in Figure 9 (#35).

With respect to Claim 4, in Matsumoto as modified by Suzuki the circumferential groove would be positioned around the x-ray facing surface as Suzuki teaches placement on the top surface (see Figs. 3-7).

With respect to Claim 6, Suzuki teaches the groove itself is the entry port.

With respect to Claims 7, 17, and 20, Matsumoto teaches an x-ray assembly comprising an x-ray target element (Col. 1, lines 12-14; Figs. 1 and 2A, #14) that is mounted to a target shaft (rotary shaft, Col. 1, lines 16-20; Figs. 2A, 2B, and 3, #16).

Matsumoto fails to teach at least one weight element adapted to be securable in a plurality of positions within a circumferential flange positioned around a perimeter surface of the x-ray target element.

Suzuki teaches an assembly and method of balancing a rotating element using a flange (rotor flange, Col. 8, lines 1-12; Fig. 9, #15) that has a circumferential groove (concentric annular recess, Col. 8, lines 1-12; Fig. 9, #35) and at least one weight element (balance weight, Col. 8, lines 13-15; Fig. 9, #14) that is adaptable to be securable (Col. 8, lines 13-15) in a plurality of positions in the groove (Col. 3, lines 62-65).

It would have been obvious to one of ordinary skill in the art at the time of the invention use the balancing technique for the rotor as taught by Suzuki to the rotating target element taught by Matsumoto. One would have been motivated to make this

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modification to avoid operational stresses such as noise, vibrations, and bearing deterioration.

5. Claim 10 is rejected under 35 U.S.C 103(a) as being unpatentable over Matsumoto and Suzuki as applied to Claim 1 above, and further in view of Siebolds et al.

With respect to Claim 10, Matsumoto as modified by Suzuki teaches all the characteristic features of the invention but fails to particularly teach a securing elbow slot comprised of a t-shaped slot.

Siebolds et al. teaches a t-shaped securing elbow slot (t-slot, [0040]; Fig. 1, #2).

The t-shaped slot of Siebolds et al. is equally effective as the triangular slot of Berry et al. Further, applicant has provided no criticality regarding the particular slot configuration employed nor that it solves any long-standing problem in the art. Therefore, it would have been an obvious matter of design for one of ordinary skill in the art at the time the invention was made to employ the t-shaped securing elbow slot of Siebolds et al. in place of the triangular slot suggested by Berry et al. in view of its functional equivalence.

6. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumoto and Suzuki as applied to Claim 1 above, and further in view of Barber.

With respect to Claim 12, Matsumoto as modified by Suzuki teaches all the characteristic features of the invention but fails to teach an expandable weight assembly including an expansion bore and an expansion screw wherein the expansion screw expands the expandable weight assembly to secure at least one weight element within the circumferential groove.

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Barber teaches an expandable weight assembly (Col. 1, line 61 to Col. 2, line 4; Figs. 1, 2, 3, & 5; #15) including a bore (Col. 2, lines 5-17; Figs. 3, 4, 5, 6, and 7; #37) and an expansion screw (Col. 2, lines 5-17; Figs. 3 & 5, #27) to expands the expandable weight within a circumferential groove (circular groove, Col. 1, line 61 to Col. 2, line 4; Figs. 1, 3, & 5, #13).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the expandable weight assembly of Barber balancing the target element of Matsumoto. One would have been motivated to make this modification because the friction fit of the expandable weight assembly allows for precise placement.

7. Claims 5 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hansen et al. (2002/0191749 A1) in view of Berry et al.

With respect to Claims 5 and 15, Hansen et al. teaches an x-ray tube ([0019], lines 1-4; Figs. 2 & 3, #12) comprising an x-ray target ([0019], lines 1-4; Figs. 2 & 3, #40) that is mounted to a target shaft ([0019], lines 1-4; Fig. 3, #50) wherein the x-ray target consists of a vertical plate (radially-extending portion, [0019], lines 15-17; Fig. 3, #54) and a central neck portion (axially-extending portion, [0019], lines 15-17; Fig. 3, #56) that is extending from the x-ray facing surface.

Hansen et al. fails to teach a circumferential feature on the central neck portion.

Berry et al. teaches that a traditional balancing technique is to provide a "circumferential balance groove in one or more of the rotational component..." (Col. 1, lines 13-16

It would have been obvious to one of ordinary skill in the art at the time of the invention to place the circumferential balance groove of Berry et al. on the central

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neck portion of Hansen et al. One would have been motivated to make this modification because the protruding characteristic of the central neck portion provides easier access for placement of balance weights on the circumferential groove.

Allowable Subject Matter

Claim 8 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the prior art teaches a circumferential feature comprised of a flange element positioned around the perimeter of a rotating element, but fails to teach or render obvious a circumferential feature comprised of mounting bores within the flange as required by Claim 8.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Knorowski et al. (USP 6,477,916 B2) teaches a balance weight (Col. 1, lines 57-60; Figs. 1-5; #30) that is placed in a circumferential groove (Col. 4, lines 29-35; Figs. 1-5, #12) for a means of balancing a rotating element.

Kazumi (JP 10221631) teaches a balance weight that is placed in a circumferential groove around the perimeter of a rotating element for a means of balancing the rotating element (see abstract).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mona M. Sanei whose telephone number is (571) 272-

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8656. The examiner can normally be reached from Monday through Friday from 9:00 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward J. Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MMS

A handwritten signature in black ink, appearing to read 'Edward J. Glick', with a stylized, flowing script.

EDWARD J. GLICK
SUPERVISORY PATENT EXAMINER